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Tele-Audiology Today: Part I- Background, Current Practices, and Case Examples

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Presenter Disclosures

- Financial:
 - Honorarium for presenting this course
 - No financial gain or endorsement of any specific telehealth technologies
- Non-financial:
 - Member on the ASHA Political Action Committee (PAC) Board
 - Reviewer for the Technology and Telepractice Committee for ASHA Convention
 - Employee of Norton Sound Health Corporation



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- Sponsor Disclosure: This course is presented by Salus University in partnership with AudiologyOnline.

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Learning Outcomes

As a result of this course, participants will be able to:

- describe current practices in tele-audiology.
- describe examples tele-audiology solutions and workflows for remote and isolated communities.
- relate case examples and best practices in tele-audiology to their own practice.

Circumstances related to COVID-19

Telehealth

- “The use of electronic information and communication technologies to provide and support health care when distance separates participants.”
 - Health care at a distance



Field, 1996
IOM Committee

Benefits of Telehealth

- Increased access to providers (addresses provider shortages)
 - Reduced wait times
- Follow-up
 - Reduced lost to follow-up
 - Increased timeliness of care
- Increased communication between providers and patients
- Decreased cost of care
- Reduced travel burden

Benefit of
provider/patient safety
during COVID-19
Circumstances

Q9

Evidence in Tele-Audiology

- **2010 Literature Review** (Swanepoel & Hall)
 - Screening, Diagnosis, Intervention, Patient Perceptions
 - Video otoscopy
 - Tympanometry
 - OAE
 - AABR/ABR
 - Audiometry
 - Speech-in-noise testing
 - Balance
 - Intraoperative monitoring
 - Hearing aid fitting, counseling and verification
 - CI programming
 - Tinnitus therapy

- Govender & Mars, 2017:
 - Audiological management in children
- Bush, Thompson, Irungu, & Ayugi, 2016:
 - Auditory rehab, CI and HA

Q2

Tele-Audiology Programs

- Veterans Affairs (2009+)
 - Remote hearing assessment/hearing aid troubleshooting/programming (Gladden et al 2013, 2015)
- EHDI/Hearing screening
 - Krumm et al 2008, McCarthy et al 2010, Dharmar et al 2016
- Cochlear Implant fitting
 - Wasowski et al 2012, McElveen et al 2010, Ramos et al 2009
- Hearing aids
 - Fitting/programming/troubleshooting
 - Campos and Ferrari 2012, Saunders & Chisolm, 2015
- Balance Assessment
 - Mobile applications/Nintendo Wii
 - Park & Lee 2014
 - Patterson et al 2014, Moral-Munoz et al 2018

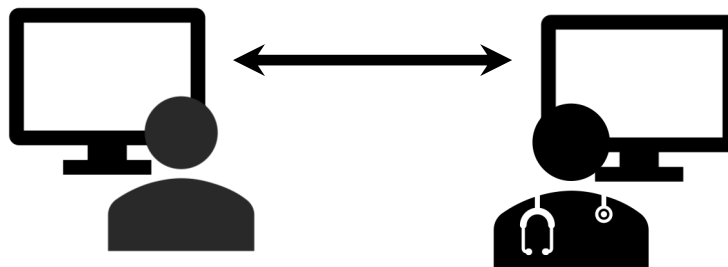
Types of Telehealth

- Synchronous (real-time)
 - Provider and patient at the same time
- Asynchronous (store-and-forward)
 - Patient is seen/services provided without provider present
- Hybrid
- Remote patient monitoring
- mHealth (cloud-based/self-guided)
 - "...any use of mobile technology to address healthcare challenges such as access, quality, affordability, matching of resources, and behavioral norms through the exchange of information"
- E-Consult

-Qiang et al. 2011

Q1

Real-time/Synchronous

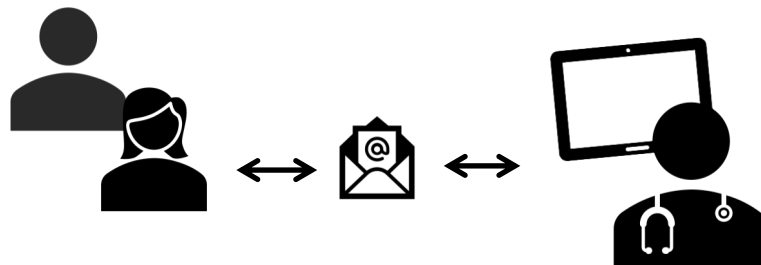


Real-time/Synchronous

- Audiologist provides support to facilitator provision of audiological service
 - Real time interpretation of results
 - Quality of data collected
- Audiologist controls computer at remote location
 - Remote desktop/application sharing software



Asynchronous/Store-and-Forward



Asynchronous/Store-and-Forward

- Collection of many types of audiological data
 - Otoscopic images, tympanograms, OAEs, automated hearing thresholds, vitals
 - Low bandwidth



Remote Patient Monitoring

- Remote tracking of health data
 - Blood Pressure
 - Blood Sugar
 - Oxygen Saturation
 - Heart Rate
 - EKG



m-Health

- Health metrics using mobile technology
 - Blood pressure
 - Blood sugar
 - Bluetooth enabled digital scales
 - Biometric data from wearables
 - Hearing testing
 - Otoscopy



E-Consult

- Verbal/audio-only telephone consult
- Virtual check-in via patient portals/messaging technologies





Tele-Supervision/Education

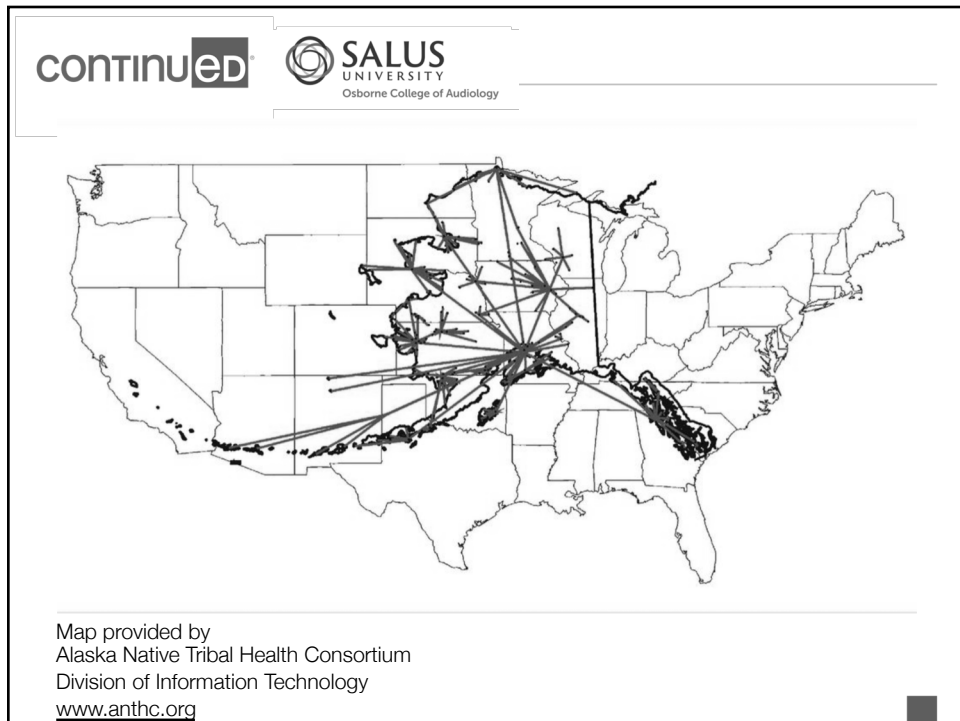
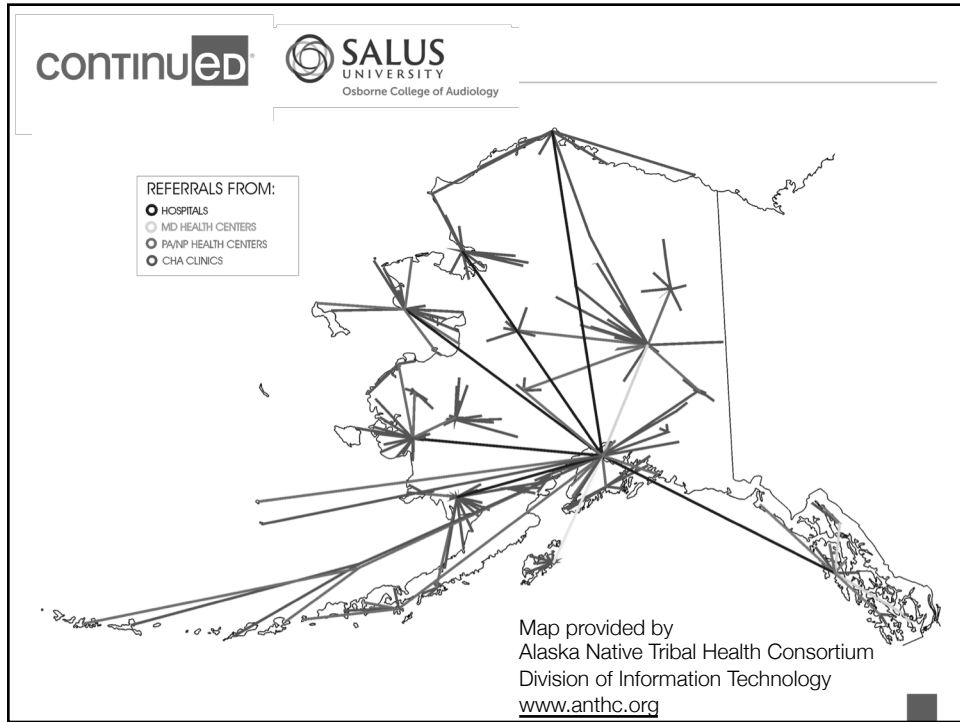
- Students/supervision
- Training of
paraprofessionals/assistants/technicians
- Continuing education/training for audiologists
 - Certification/Licensure

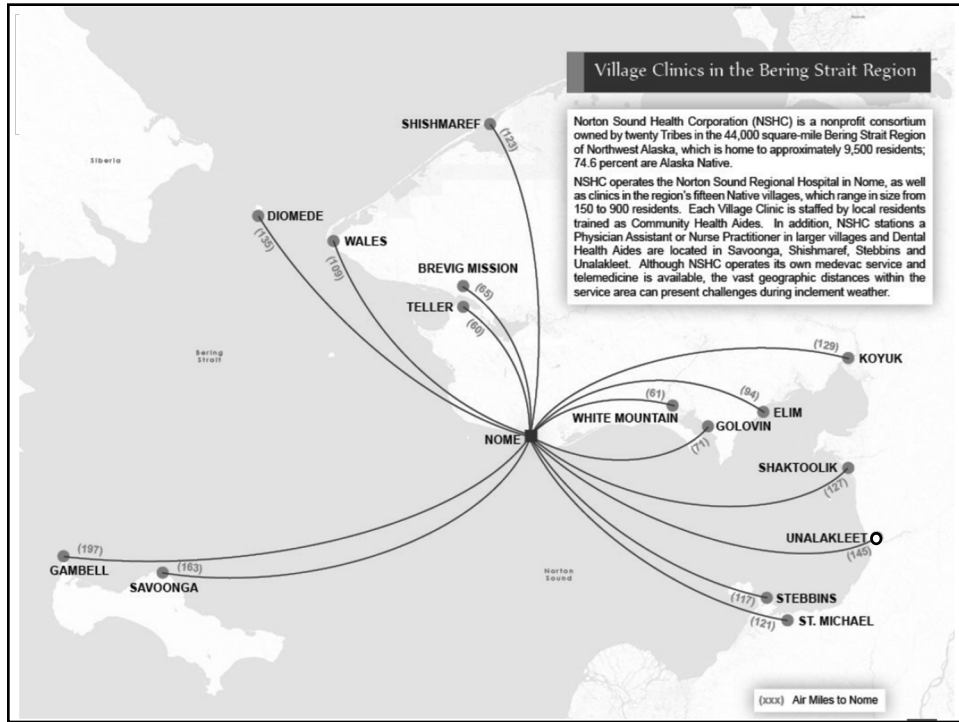


Telehealth Models

- Provider to Provider
- Provider to Remote Clinic
 - Real time
 - Store-and-Forward
- Provider Direct to Patient



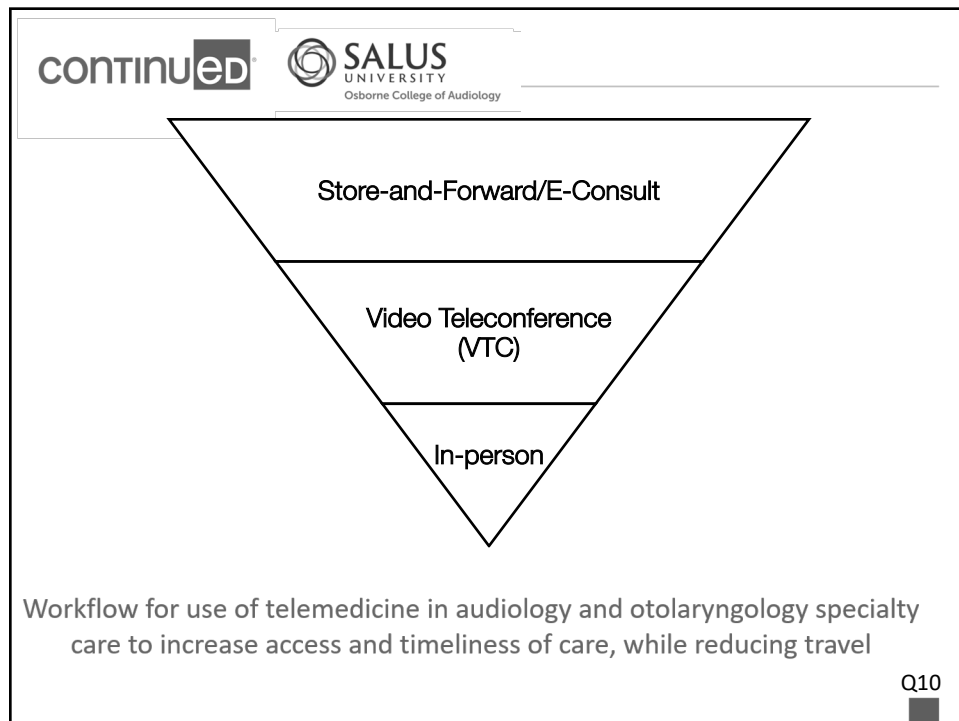




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Telehealth Services

- Telehealth: Store and forward, real time (video/remote desktop), hybrid, mobile
- Video otoscopy, tympanometry, acoustic reflexes, OAEs, surgical/medical management, hearing aid fitting and programming, troubleshooting, counseling, aural rehabilitation, newborn hearing screening
- In development:
 - Balance assessment, CI mapping, electrophysiologic testing
 - Direct to patient models

AFHCAN Overview

- 250+ clinic locations across the state
- NSHC = 15,000+ cases in 2019
 - (store-and-forward)
- Top encounter types
 - Otologic
 - Behavioral Health





Q5

Cases Examples

- Cholesteatoma
- Sudden sensorineural hearing loss
- Brain tumor
- AOM/SOM
- Tube/tympanoplasty/mastoidectomy follow-up
- Hearing aid fitting


Q4






Getting started- Quick steps



Clinical Need	Technology	Models	Reimbursement
<ul style="list-style-type: none"> Screening Diagnostics Intervention Existing Patients New Patients 	<ul style="list-style-type: none"> Hardware Software Video Peripherals Portals EHRs Communication 	<ul style="list-style-type: none"> Real time Asynchronous Hybrid E-consult 	<ul style="list-style-type: none"> Documentation Coding/Billing





Clinical Need/Audiology Triage

Existing Patients	New Patients
<ul style="list-style-type: none"> Change in ear/hearing symptoms Amplification Follow-up Therapies (vestibular/tinnitus) 	<ul style="list-style-type: none"> Diagnostics <ul style="list-style-type: none"> Otologic Audiologic Vestibular Rehabilitation





Technology


NSHC Telemedicine Equipment Options

Equipment



Vidyo




Zoom




AFHCAN Cart

Tanberg/Cisco





TigerConnect



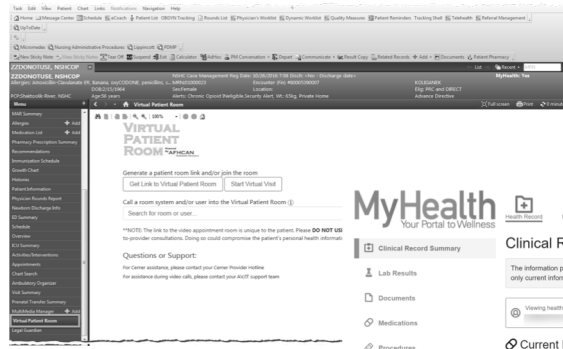
- Inventory of hardware/software options
- Video capabilities
- Peripherals


▪ **Tips:**

- Infrastructure already in place
- EHR
- E-consult messaging portals
- Messaging systems

Electronic Health Record





Your Portal to Wellness

Clinical Record Summary

The information provided below reflects the information in the electronic medical record. Medications and Allergies show only current information - they do not display past medications or allergies.

Viewing health record for [Patient Name]

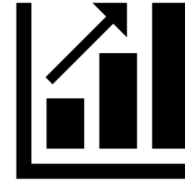
Current Medications

Your pharmacy may make changes, so be sure to ask your pharmacist for exact medication instructions.

Date Started On: Oct 19, 2019 Ordered By: [Physician Name]

Internet Penetration

- United States Dec 2019: 89.8%
 - <https://www.internetworldstats.com/>
- 19 million Americans lack access to fixed broadband service
 - 1/4th in Rural Areas
 - 1/3rd in Tribal Areas
 - [FCC Broadband Deployment Reports](#)



Equipment-VTC

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Software <ul style="list-style-type: none"> ▪ Vidyo ▪ Zoom ▪ Bluejean ▪ Doxy.me ▪ Many more.... | <ul style="list-style-type: none"> ▪ Hardware (location) <ul style="list-style-type: none"> ▪ Cameras (laptop/desktop) ▪ Pan/tilt/zoom (remote) ▪ Headset |
|---|--|



Deaf, hard of hearing = modifications for hearing over VTC

Modifications to HIPAA

- HHS-Remote Telehealth Communications
 - Popular video chat apps: FaceTime, Google Hangout, Skype, Facebook Messenger
- Notes:
 - Highest level of privacy and security
 - Ensuring privacy during session
 - Consent and acknowledgement of virtual visit service
 - Workflows (work accts and emails)

Equipment-Peripherals

- Home/patient models
 - Vitals
 - Tyto
 - Otoscopy
 - Cell Scope, Tyto, hearScope
 - Hearing
 - uHear, AudCal, Mimi



Equipment-Peripherals

- Professional models

- Shoebox
- HearScreen
- Kuduwave
- GSI AMTAS
- Creare



Infection
Control

Evidence

- Otoscopy
 - Kokesh et al 2003, 2004, 2010
 - Biagio et al 2014
 - Lancaster et al 2008
- Hearing Testing mobile
 - HearXGroup (HearScreen)
 - Swanepoel (<https://www.hearxgroup.com/research>)
 - Digits in Noise test (HearDigits)
 - Clearwater Clinical Shoebox
 - <https://www.shoebox.md/clinical-validation/>
- Hearing Testing Apps (Bright 2016)
 - uHear (unitron)- Arczik & Serpanos 2018
 - AudCal- Larrosa et al 2015
 - Mimi- Hain & Cherchi 2018 (not validated)

Example models

Existing Patient



- Telephone call check-in
- Real time VTC for HAC
- Asynchronous appt for remote programming
- Change in hearing
 - App vs mobile device


New patients

- CEDRA/In-take Questionnaires
 - (e.g. HHIA)
- Real time case history
- Hearing test
 - App/mobile device
- Remote hearing aid fitting

Northwestern.cedra.edu

Consumer Ear Disease Risk Assessment

Northwestern  



Home What's My Risk? The Research The Team

WELCOME

The Consumer Ear Disease Risk Assessment (CEDRA) tool is a questionnaire created by a multi-disciplinary and multi-institutional team of researchers and clinicians. CEDRA was designed to let consumers interested in hearing aids assess their

Scenarios: Hearing Sensitivity

- Automated audiometry (store-and-forward)
 - app/mobile device
 - Integrated audiometer
- PC-based audiometry (remote desktop)
 - Remote location



Q6

Scenarios: Hearing Aid Fitting

- How to obtain highest level of “best practice” given limitations
 - e. g.
 - collection of RECD during in-person visit
 - automated hearing testing, mailing of pre-programmed hearing aid, VTC and remote programming follow-ups, validation questionnaires

Thinking outside of the box



Q7



Telehealth/Licensure Expansion

- Coronavirus Preparedness and Response Supplemental Appropriations Act
 - Waiver 1135
- Alliance for Connected Care
- ASHA



Reimbursement

- Caveats
 - Not an expert
 - Guidelines are changing rapidly



Reimbursement

- ASHA State-by-State
- ASHA- Commercial Insurance
 - actioncenter@asha.org
- American Academy of Audiology-Telehealth Update
 - Reimbursement@audiology.org
- CMS
 - Fact Sheet
 - Frequently Asked Questions
- AMA-Coding advise during covid-pandemic
 - Scenario 10 & 11

Telehealth Service Types

- Telehealth Visits
 - Real time, patient/provider visit (= in-person)
- Virtual Visits
 - 5- to 30-minute exchange (audio and/or video)
 - Remote review of images/video/digital data
- E-Visits
 - Online patient portal



Reimbursement-Telehealth Visits

- provider must use an interactive audio and video telecommunications system that permits real-time communication between the distant site and the patient at **home**
- prior established relationship, but HHS will not conduct audits to ensure that such a prior relationship existed for claims submitted during this public health emergency
- Paid at same rate as regular, in-person visits



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Modifiers/POS

- -95
 - Spontaneous telehealth service (real time interactive audio/video telecommunication between provider and patient)
 - Must meet same key components of in-person exam
- GT
 - Spontaneous telehealth service (older HCPCS code)
- GQ
 - Asynchronous telecommunications system
- POS (Place of service)
 - 02 = telehealth
 - 11 = office or home office



Reimbursement-Virtual Check-ins

Code	Description
G2061	Qualified nonphysician healthcare professional online assessment, for an established patient, for up to seven days, cumulative time during the 7 days; 5-10 minutes
G2062	Qualified nonphysician healthcare professional online assessment service, for an established patient, for up to seven days, cumulative time during the 7 days; 11-20 minutes
G2063	Qualified nonphysician qualified healthcare professional assessment service, for an established patient, for up to seven days, cumulative time during the 7 days; 21 or more minutes
G2010	Remote evaluation of recorded video and/or images submitted by an established patient (e.g., store and forward), including interpretation with follow-up with the patient within 24 business hours, not originating from a related e/m service provided within the previous 7 days nor leading to an e/m service or procedure within the next 24 hours or soonest available appointment
G2012	Brief communication technology-based service, e.g. virtual check-in, by a physician or other qualified health care professional who can report evaluation and management services, provided to an established patient, not originating from a related e/m service provided within the previous 7 days nor leading to an e/m service or procedure within the next 24 hours or soonest available appointment; 5-10 minutes of medical discussion



Reimbursement- E-Visits

Code	Description
98970	Qualified nonphysician health care professional online digital evaluation and management service, for an established patient, for up to 7 days, cumulative time during the 7 days; 5-10 minutes
98971	Qualified nonphysician health care professional online digital evaluation and management service, for an established patient, for up to 7 days, cumulative time during the 7 days; 11-20 minutes
98972	Qualified nonphysician health care professional online digital evaluation and management service, for an established patient, for up to 7 days, cumulative time during the 7 days; 21 or more minutes

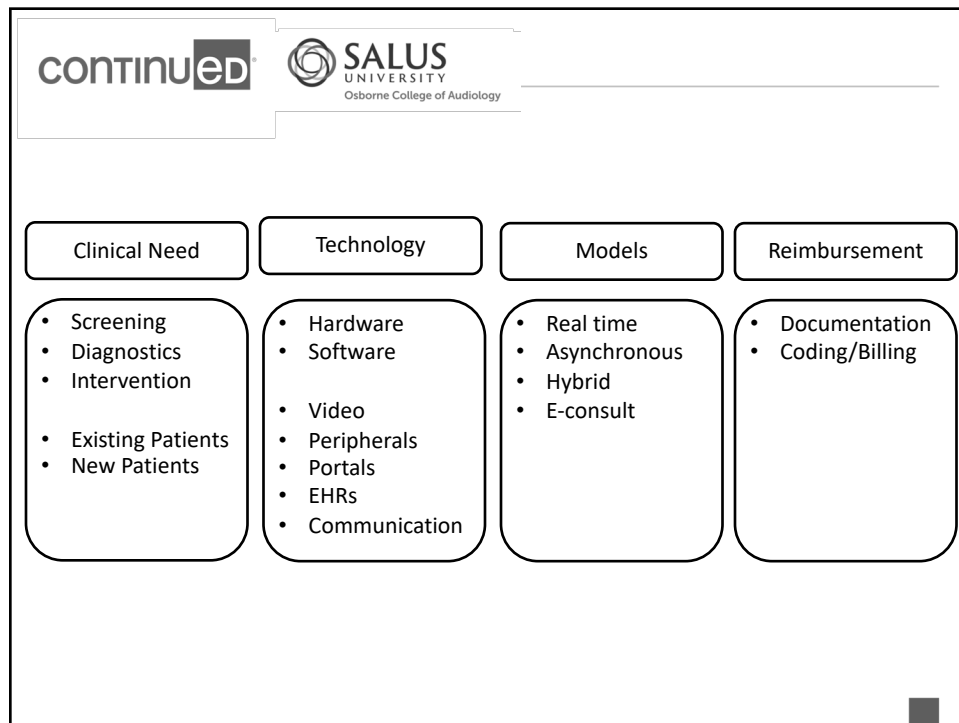
Reimbursement- E-Visits

Code	Description
98966	Telephone assessment and management service provided by a qualified nonphysician health care professional to an established patient, parent, or guardian not originating from a related assessment and management service provided within the previous 7 days nor leading to an assessment and management service or procedure within the next 24 hours or soonest available appointment; 5-10 minutes of medical discussion
98967	Telephone assessment and management service provided by a qualified nonphysician health care professional to an established patient, parent, or guardian not originating from a related assessment and management service provided within the previous 7 days nor leading to an assessment and management service or procedure within the next 24 hours or soonest available appointment; 11-20 minutes of medical discussion
98968	Telephone assessment and management service provided by a qualified nonphysician health care professional to an established patient, parent, or guardian not originating from a related assessment and management service provided within the previous 7 days nor leading to an assessment and management service or procedure within the next 24 hours or soonest available appointment; 21-30 minutes of medical discussion

Documentation

- **Telephone Calls for Patient Management**
 - Problem focused history
 - Decision making and management
 - Record start/stop times
- **Telehealth – VTC**
 - Document who's present and from what location
 - Chief Complaint
 - Problem focused history
 - Problem focused examination
 - Medical decision making
- **Telehealth - Store and Forward**
 - Chief Complaint
 - A problem focused history
 - A problem focused examination based on the analysis of digital images, sounds or previously recorded video from the requesting provider
 - Digital Images must be specific to the patient's medical condition and adequate for furnishing or confirming a diagnosis or a treatment plan
 - Medical decision making
- Consent to telehealth services, documentation regarding level of telehealth





Overview:

Components of tele-audiology programs

- Put together a team to help facilitate expedited implantation
 - training, expertise, relationships
- Needs assessment
- Identify types of models required for existent environment
 - Utilization of appropriate equipment, EHR integration
- Determine protocols for patient/workflows
- Evaluate sustainability, including reimbursement and market potential
 - Buy-in (admin, staff, financial)

Q3/Q8



Next Week

- More foundation and research in tele-audiology telehealth
- Describe and demonstrate models used in rural Alaska
- Case examples and discussion
 - **Feedback from current need**
- Telehealth program development/components
- OTC research and patient-driven market
 - OTC Hearing aids/PSAPs and self-fitting/management



Questions/Contact

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